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ABSTRACT

Teacher immediacy has surfaced as an important instructional communication variable, yet little is known about how it functions to effect learning. To offer an explanation as to how teacher immediacy facilitates learning, a study investigated implicit communication theory. Subjects consisted of 625 undergraduate students who completed questionnaires later subjected to regression analyses. As in previous research, teacher verbal and nonverbal immediacy effected cognitive and affective learning. Findings indicate that implicit communication theory helps explain why learning occurs. Specifically, the dimensions of pleasure and arousal accounted for over half of learning variance. Further, implicit communication theory is significantly related to teacher immediacy. Results suggest that the integration of implicit communication theory with learning in general and specific instructional variables such as teacher immediacy is appropriate and fruitful. (Nine tables of data are included; 103 references are attached.) (Author)

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A Study of the Application of Implicit Communication Theory to Teacher Immediacy and Student Learning

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ABSTRACT

Teacher immediacy has surfaced as an important instructional communication variable, yet little is known about how it functions to effect learning. To offer an explanation as to how teacher immediacy facilitates learning, implicit communication theory is investigated. Subjects consisted of 625 undergraduate students who completed questionnaires later subjected to regression analyses. As in previous research, teacher verbal and nonverbal immediacy effects cognitive and affective learning. Findings indicate that implicit communication theory helps explain why learning occurs. Specifically, the dimensions of pleasure and arousal accounted for over half of learning variance. Further, implicit communication theory is significantly related to teacher immediacy. Results suggest that the integration of implicit communication theory with learning in general and specific instructional variables such as teacher immediacy is appropriate and fruitful.

Teacher immediacy in the classroom is perhaps the most popular research variable to emerge in instructional communication research in the past two decades. Results from programmatic research of teacher immediacy make clear the importance of this variable to teachers and learners alike. Yet despite the vitality of this research stream, little is known about how such specific teacher behaviors function to enhance learning. The purpose of this paper is to apply implicit communication theory as a paradigm which would explain the increased learning that results from a teacher's use of immediate behaviors. A brief overview of immediacy is offered followed by a description of implicit communication theory and its application to the teaching and learning process.

Immediacy

Andersen (1978) defined teacher immediacy as "the nonverbal behavior manifestations of high affect" (1978, p.545). Andersen found that teacher immediacy accounted for a major portion of the variance in affect toward the instructor, affect toward course content, affect toward behaviors recommended, and likelihood of enroling in another course of the same nature (Andersen, 1978; 1979; 1984; Andersen & Andersen, 1982; 1987; Andersen, Norton, & Nussbaum, 1981; Andersen & Withrow, 1981).

Teacher immediacy consists of behaviors that are easily prescribed (Andersen, 1978; Gorham, 1988 Sanders & Wiseman, 1990). Teacher immediacy includes such behaviors as eye-contact, head nods, smiles, and the use on inclusive language. Following Andersen's primary research, much replication has validated her initial findings; teacher immediacy has been repeatedly associated with student learning. Some of the most important and provocative findings for teacher immediacy are noted below:

1. Verbal teacher immediacy increases student cognitive learning. [1]
2. Verbal teacher immediacy increases student affective and behavioral learning. [2]
3. Nonverbal teacher immediacy increases student cognitive learning, and information recall. [3]
4. Nonverbal teacher immediacy increases affective learning. [4]
5. Nonverbal teacher immediacy increases students' perceptions of teacher effectiveness. [5]
6. Nonverbal teacher immediacy plays a mediating role in the reception and effectiveness of teacher control strategies.[6]
7. Verbal and nonverbal teacher immediacy is significantly and positively related to perceptions of teacher clarity. [7]
8. Teacher immediacy produces a reciprocal liking among teacher and student. [8]

Additional evidence supports such findings across divergent grade levels (McDowell, McDowell & Hyerdahl, 1980; Plax, Kearney, McCroskey, & Richmond, 1986). and ethnicities (Powell & Hargrove, 1990; Sanders & Wiseman, 1990), different course types (Kearney, Plax & Wendt-wasco, 1985., and modified or nontraditional classroom structures (Andersen, 1979; Kearney, Et al., 1985; Stewart & Wheeless, 1987).

One of the purposes of this investigation is to offer additional verification of previous teacher immediacy research. Toward this end, the following hypothesis will be tested:

H1: Verbal and nonverbal teacher immediacy will be significantly and positively related to student cognitive and affective learning.

Although results from research in teacher immediacy has made some useful generalizations possible, little is known about *why and how* teacher immediacy functions to increase learning; we know this variable effects learning but we don't know why or how learning is mediated. One explanation may be gleaned by returning to the theoretical framework from which immediacy was originally removed. By placing teacher immediacy within the larger framework of implicit communication theory the present study aims to provide an explanation of the way teacher immediacy functions to increase learning.

Implicit Communication Theory

Mehrabian (1981) defines implicit communication as "aspects of speech [that] are not dictated by correct grammar but are rather expressions of feelings and attitudes above and beyond the contents conveyed by speech (p.2)." He classifies such aspects of communication as head nods, use of personal space, facial expression, and body posture as well as paralinguistic features of communication such as tone, rate, pitch, and volume as *'implicit'* messages because they are often unintentional expressions of underlying emotions. When emotions are not expressed *explicitly* through words and overt behaviors, they often manifest themselves in the form of *implicit* messages to which others consciously or subconsciously respond. Thus, implicit communication is a concept that makes sense out of subtle interactions among people.

Implicit communication theory offers an explanation for an individual's emotional response based upon the way they perceive "information about feelings and like-dislike or attitudes" (Mehrabian, 1981, p. 3) from others. Mehrabian (1981) holds that all emotional states may be adequately described in terms of three independent dimensions: 1) *pleasure-displeasure*, 2) *arousal-nonarousal*, and, 3) *dominance-submissiveness*. Each dimension is of

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a continuous nature and has within its range positive and negative values as well as a neutral point. Combinations of various values on each dimension characterize different emotions.

Pleasure-displeasure.

The *pleasure-displeasure* dimension is defined by adjective pairs like happy-unhappy, pleased-annoyed, or satisfied-unsatisfied. Psychological indication of this dimension is the presence or absence of a longing to *approach* the subject or object (Mehrabian, 1981). Behavioral indications for this dimension are smiles, laughter, and positive facial expressions (Mehrabian, 1980). Generally, stimuli which produce greater pleasure elicit greater liking (Mehrabian, 1981).

Arousal-nonarousal.

The *arousal-nonarousal* dimension is defined by adjective pairs like stimulated-relaxed, excited-calm, or frenzied-sluggish. Psychological indication of this dimension is mental alertness (Mehrabian, 1981). Behavioral indications for this dimension are physical activity levels (Mehrabian, 1980). The *arousal* dimension modifies emotional reactions to stimuli by exaggerating the reaction of *liking* or *disliking*. For example, if a stimulus is found *pleasurable* and *arousing*, it will be *liked* more than if it is found *pleasurable* but *nonarousing*. Conversely, if a stimulus is found *displeasurable* and *arousing*, it will be *liked* less than if it is found *displeasurable* and *nonarousing* (Mehrabian, 1981).

Dominance-submissiveness.

The *dominance-submissiveness* dimension is defined by adjective pairs like controlling-controlled, influential-influenced, or in control-cared for (Mehrabian, 1981). Psychological indications of this dimension are feelings of power and control (Mehrabian, 1981). Behavioral indications for this dimension are found in a relaxed posture, body lean, reclining angle while seated, or asymmetrical positioning of the limbs (Mehrabian, 1980). Generally, emotions of greater *dominance* result in an increased license or permission to acknowledge *liking* or *disliking*. Alternately, emotions of *submissiveness* result in decreased license to acknowledge *liking* or *disliking* (Mehrabian, 1981).

Combinations of these three dimensions are necessary and sufficient to describe all emotions (Mehrabian, 1981). Fluctuating values for the dimensions of *pleasure* and *arousal* effect the degree to which we feel *liking*. We feel more or less license to acknowledge those feelings based upon the dimension of *dominance-submissiveness*.

Mehrabian (1981) asserts that these three dimensions are central to a larger framework he calls implicit communication theory.

Mehrabian (1981, p. 9) speculated that implicit communication theory can be useful in explaining why learning occurs when he noted: "Our judgments of objects, events, or people on the three dimensions of evaluation, activity and potency are very basic, fundamental aspects of our cognitive functioning." At least one researcher has suggested that teacher immediacy (Gorham, 1988) can be understood within the larger framework of implicit communication theory. Beebe and Biggers (1990) suggest the application of implicit communication theory to explain why specific low inference teacher behaviors such as increased immediacy or use of power result in student learning. Yet, to date there has been no scientific investigation of the applicability of implicit communication theory to learning.

In a study investigating implicit communication theory's ability to explain the effects of speech delivery variations on perceived source credibility and receiver comprehension, Beebe and Biggers' (1988) findings indicate that emotions, as defined by implicit communication theory, play an important role in the perceptions of credibility, and to a lesser degree, comprehension.

This successful application of implicit communication theory to speaker variables suggests that similar applications can be made to teacher-student interactions. The third hypothesis in this study addresses the presumed relationship among implicit communication theory as measured by student emotional response and learning:

H2: *Pleasure*, *arousal* and *dominance* will be significantly and positively related to student cognitive and affective learning.

A key purpose of the present study is to shed some light upon how teacher immediacy functions to increase student learning. Beebe and Biggers (1990) argue that the effects of teacher variables on learning may be explained using the *approach* metaphor central to implicit communication theory. In reviewing relevant literature in instructional communication, they theorize that teacher immediacy, enthusiasm, solidarity, nonverbal communication, communicator style, use of humor, and power can all be explained within the context of student *approach* behaviors.

Reuniting teacher immediacy with the approach metaphor central to implicit communication theory will provide insights into how teacher immediacy functions. The importance of clarity can be noted in Andersen, Norton,

and Nussbaum's (1981) remarks: "Whatever the starting point, this relationship between what is behaviorally done and what is cognitively perceived is crucial before practical suggestions can result from this line of research" (p. 391). Placed within a theoretical framework, more conceptual and operational clarity will become possible for teacher immediacy. Grounding teacher variables in a theoretical frame that explains how they function offers more than just explanative power; it offers increased heuristic power as well.

Conceptually, teacher immediacy may increase learning by effecting students' *liking* for the instructor and/or course (Andersen, 1978, 1979). *Liking* as an attitude can be operationalized in terms of a combination of Mehrabian's three dimensions of emotion. Increases in *pleasure*, *arousal* and *dominance* levels may signal this student *liking* (Mehrabian, 1981). Thus, teacher immediacy may function by eliciting emotional responses conducive to learning.

Based upon implicit communication theory assumptions, student perceptions of instructor use of immediacy should be correlated with student *liking* as operationalized by increases in *pleasure*, *arousal* and *dominance*. This relationship might be expressed in terms of student emotions co-varying with perceived teacher immediacy. Beebe and Biggers (1990, p.18) explain: "If the teacher communicates *liking* through *approach* then the student must feel *pleasure*, *arousal* and *dominance* as well because he/she then *approaches* both the teacher and the class material."

Accordingly, then, teacher immediacy would involve a three-part process: First, teachers' emotions are communicated *implicitly* as teacher immediacy and are observed by students. Second, students feel increased or decreased *pleasure*, *arousal* and *dominance* characteristic of increased or decreased *liking* . Third, *liking* manifests itself in *approach* behaviors (i.e., learning) in the classroom. Correspondingly, *disliking* results in *avoidance* behaviors. Given these assumptions, the following hypothesis is forwarded:

H3: *Pleasure*, *arousal*, and *dominance* will account for more variance in student cognitive and affective learning than will verbal and nonverbal teacher immediacy.

Methods

Subjects

Participants consisted of 625 undergraduate student volunteers of preexisting, intact introductory communication courses at a southwestern university.

Measures

The variables of interest to the present investigation were: emotional state across three dimensions, *pleasure*, *arousal*, and *dominance*; verbal and nonverbal teacher immediacy; and, cognitive and affective learning. Extraneous variables controlled for were: class size, and several instructor and subject demographic variables. Each will be discussed separately.

Emotional State

Emotional state of subjects was operationalized by semantic differential measures of emotional state developed by Mehrabian (1972), reported in Mehrabian & Russell, (1974). These scales consisted of 18 pairs of bipolar adjectives that describe emotion. The scales are grouped into three dimensions (*Pleasure*, *Arousal*, and *Dominance*) with six items each. These scales have indicated adequate reliability in previous research. One study reported reliability coefficient alpha estimates of .73 for *pleasure*, .88 for *arousal*, and .75 for *dominance* (Beebe & Biggers, 1986). Similar reliability has been reported elsewhere (Mehrabian & Russell, 1974; Biggers, Beebe & Masterson, 1984; Beebe & Biggers, 1988).

Immediacy

Teacher immediacy was operationalized in two ways: nonverbal teacher immediacy behaviors were measured with scales developed by Andersen, (1978) and verbal teacher immediacy behaviors were measured with scales developed by Gorham (1988). Total teacher immediacy was operationalized by the combination of both scales, producing thirty Likert-type five-step items (from 0=never to 4=very often) characterizing teacher verbal and nonverbal immediate behaviors. The 17 verbal items of the scales have demonstrated a split-half reliability of .94, and the 13 nonverbal items have demonstrated a split-half reliability of .84 (Gorham, 1988).

Learning

Learning was operationalized according to previous research (Gorham, 1988; Sanders & Wiseman, 1990) to insure consistency. To measure learning, scales that reflect cognitive, as well as affective and behavioral gains, and will be explained separately below.

Cognitive Learning.

Cognitive learning was operationalized in two ways; learning and learning-loss. Learning was measured by asking students to assess their own learning in the previous class. Subjects were first asked: "On a scale of 0-9, how much did you learn in the class (0 means you learned nothing and 9 means you learned more in this class than in any other)?" Next, to measure learning-loss, subjects were asked: "How much do you think you could have learned in the class if you had the ideal instructor?" The numerical value of a response from the first question was subtracted from the value of the second to yield a "learning-loss" score. This method has successfully assessed cognitive learning in prior research (Gorham, 1988; Richmond, Gorham & McCroskey, 1987; Richmond, McCroskey, Kearney & Plax, 1985).

Affective Learning.

Affective learning was operationalized in nine ways: 1, attitude toward content; 2, attitude toward behaviors recommended; 3, attitude toward instructor; 4, behavioral intent for behaviors recommended; 5, behavioral intent for similar course enrollment; 6, behavioral intent for same teacher enrollment; 7, overall attitude; 8, overall behavioral intent; and 9, total affect. This procedure is based on previous research (Gorham, 1988; McCroskey, Richmond, Plax & Kearney, 1985). Noteworthy is the operationalization for behavioral learning in terms of behavioral intent, or the likelihood of engaging in the learned behaviors in the future, rather than the acquisition and development of specific skills. Behavioral learning was operationalized accordingly to replicate previous research (i.e., Gorham, 1988; Sanders & Wiseman, 1990).

Attitude toward content, attitude toward behaviors recommended, and attitude toward instructor were measured by three seven-step bipolar adjective scales employed by McCroskey, Richmond, Plax, & Kearney (1985). Values for the three scales were summed to create a measure for overall attitude. Behavioral intent for engaging in behaviors recommended, behavioral intent for enrolling in a similar course, and behavioral intent for enrolling for the same teacher were similarly measured by three seven-step bipolar adjective scales employed by McCroskey, Richmond, Plax & Kearney (1985). Values for these three scales were summed to create a measure for overall behavioral intent.

Total affect was measured by summing the values for overall attitude and overall behavioral intent. Previous research has found this measure to be highly reliable, producing a split-half reliability coefficient of .98 (Gorham, 1988).

Other Measures

Subjects were also asked to indicate whether the class was in their major or intended major, the amount of time in that class the instructor, student, and no one talked, and the sex and ethnicity of the instructor. This demographic information was collected both to control for extraneous variables and to replicate previous research methods (i.e., Gorham, 1988; Sanders & Wiseman, 1990). Additionally, subjects completed three other items to be included in a future study: The General Inventory of Immediacy (GI; Andersen, 1979); Compliance-gaining Strategies developed by Plax, Kearney and Tucker (1986); and the nature of the course subject according to "Person" or "Task" orientation (Kearney, Plax, & Wendt-wasco, 1985). All responses were anonymous.

Instrument

The instrument consisted of 625 booklets distributed and completed during one class period falling between weeks twelve and thirteen of a fifteen-week semester. Choosing weeks 12 and 13 for data collection is consistent with previous research (Andersen, 1979; Gorham, 1988; Sanders & Wiseman, 1990), and was employed here to ensure proper replication. A total of 606 booklets were correctly completed and analyzed. Nineteen booklets were omitted from data analysis because they were not fully completed.

Data Analysis

Hypotheses 1: Replication

To determine the validity of previous research (Gorham, 1988; Sanders & Wiseman, 1990) concerning verbal and nonverbal teacher immediacy and learning, multiple regression analyses were conducted. The predictor variables were the total scores for verbal and nonverbal teacher immediacy scales. The criterion variables were the two cognitive learning measures (learning and learning-loss), and three affective measures: overall attitude (attitude toward content, behaviors recommended, and instructor) overall behavioral intent (behavioral intent for behaviors recommended, similar course enrollment, and same teacher enrollment) and total affect. Further clarification of results was obtained by examining simple Pearson correlations.

Hypothesis 2: Implicit Communication Theory

To determine the extent to which implicit communication theory is predictive of learning, multiple regression analyses were conducted. The independent variables were scores for emotion dimensions of *pleasure*, *arousal*, and *dominance*. The dependent variables were the five learning measures (learning, learning loss, overall attitude, overall behavioral intent, and total affect) employed by Gorham (1988). Further clarification of results was obtained by examining simple Pearson correlations.

Hypothesis 3: Immediacy and Implicit Communication Theory

To determine whether *pleasure*, *arousal*, and *dominance* are stronger in accounting for student learning than verbal and nonverbal teacher immediacy, forced step-wise multiple regressions were conducted. On the independent variable side of each model, *pleasure* and *arousal were* forced into the regression model first in order of largest beta weight, followed by teacher verbal and nonverbal immediacy. Dominance was omitted from the equation because it failed to reach significance as a predictor variable. *Pleasure*, and *arousal* scores as well as verbal and nonverbal teacher immediacy scores were treated as predictor variables, while each of the learning measures (learning, learning loss, overall attitude, overall behavioral intent, and total affect) were analyzed as criterion variables. This procedure has been employed in previous research of a related nature (Richmond, 1990). Further clarification of results was obtained by examining simple Pearson correlations.

Criteria for Significance.

As in previous research, the large sample size produced high power in correlations (Gorham, 1988). To offset type one error, probability level was set at .001 for all correlations. By considering only those correlations achieving an alpha of .001 as significant, the probability of statistically significant yet meaningless results should be reduced.

Results

Reliability of Measures

Verbal teacher immediacy obtained a reliability alpha of .88 which is well within an acceptable range. Nonverbal teacher immediacy reliability was likewise acceptable with an alpha of .79. The reliability estimates in the present study are similar to previous research (Gorham, 1988).

Additional reliability estimates were calculated for each of the three emotion domains. Reliability for the *pleasure* dimension was found to be .85. The coefficient for *arousal* was .72, and for *dominance* was .36. Due to its lack of reliability, the *dominance* dimension was not included in the forced step-wise multiple regressions involved in the third hypothesis of this study. For the purposes of future replication results for the *dominance* factor was included elsewhere throughout this study.

Reliability estimates were also calculated for the dependent measures of learning. All were within an acceptable range and similar to previous research findings (Andersen, 1978; Gorham, 1988; Sanders & Wiseman, 1990).

Hypothesis One: Replication

The combined effects of verbal and nonverbal teacher immediacy were significantly and positively related to variance in learning outcomes, with verbal teacher immediacy proving the strongest contributor in each case. All multiple regression analyses for hypothesis 1 yielded meaningful results and are summarized on table 4. Generally, the amount of variance accountable varied depending on the criterion variable, and ranged from .38 for attitude toward the instructor to .10 for intention of enrolling in similar courses in the future.

Total affect was regressed by several extraneous variables. All multiple regression analyses yielded nonsignificant and seemingly random results. For teacher talk time, gender, and ethnicity, student ethnicity, gender, age, and classification and other variables results were nonsignificant and meaningless (See table 3).

Hypothesis Two: Implicit Communication Theory

The third hypothesis in the present study suggests that there is a correlation between student emotional response to teachers and student learning. Results support this hypothesis. Multiple regressions indicate that for all cognitive and affective learning measures, pleasure accounts for most of the variance, followed by arousal. The combined variance (R square) in learning measures accounted for by pleasure and arousal ranged from 32 to 50 percent, and is highly significant (see Table 5).

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To further investigate the relationships among pleasure and arousal with the learning measures, simple Pearson correlations were calculated (see Table 6). The pleasure items that correlated with learning in order of greatest magnitude were 1, 3, 5, 2, and 6. The arousal items that correlated with learning were 6, 5, and 4. The dominance dimension was not significant undoubtedly due to the lack of a reliable measure for this dimension.

Hypothesis Three: Immediacy and Implicit Communication Theory

Hypothesis three was confirmed; student emotion covaried with verbal and nonverbal teacher immediacy and accounted for more variance in student cognitive and affective learning. All forced step-wise multiple regressions using learning measures as dependent variables were significant. Table 8 summarizes the amount of variance in each of the learning measures accounted for by each regression. In all models the forced steps were in this order: *pleasure*, *arousal*, nonverbal teacher immediacy, and verbal teacher immediacy. All regressions achieved a level of significance of at least .0001 at the first step. The total variance accounted for ranged from 26 to 52 percent. *Pleasure*, *arousal*, and verbal teacher immediacy explained approximately 55 percent of the variance for attitude. Although hypothesized, dominance, and to some extent arousal, were not strong predictors.

To further investigate the emotion scale items' relationship with verbal and nonverbal teacher immediacy items, simple Pearson correlations were calculated and are reported in Table 9. The verbal teacher immediacy items that correlated strongly with *pleasure*, in order of importance, were 14, 8, 11, 13, 7, 2, 12, 9, and 5. The nonverbal teacher immediacy items that correlated strongly with *pleasure* were, in order of importance, 12, 3, 5, 12, 6, 11, 2, and 8. The Verbal teacher immediacy items that correlated strongly with *arousal* were, in order of importance, 14 and 7. One nonverbal teacher immediacy item, 13, correlated strongly with *arousal*. Correlations for *dominance* were low and nonsignificant.

DISCUSSION

Reliability of Measures

Reliability for the *pleasure* dimension was deemed acceptable (r=.85), see table 1. The reliability of the *arousal* dimension was lower than expected but still acceptable (r=.72). However, the reliability for the *dominance* dimension was well below an acceptable level (r=.36). It appears that asking students to indicate whether they feel more "awed" or "important" in the setting of a classroom is confusing and may indicate that this dimension is inappropriate in this context.

Students may be overtly aware of *dominance-submissiveness* in the classroom due to the nature of the classroom environment. If students see teachers as powerful and themselves as powerless, students may find that questions regarding *dominance* and *submissiveness* make little sense when operationalized as they were in the present study.

Students may also have misunderstood what was meant by the adjective pairs corresponding to *dominance* used in this study. Words employed in the *dominance* items such as controlling, influential, important, guided, and controlled for example, lend themselves to confusion over whether the scale is referring to student perceptions of instructor characteristics or their own feeling state in that classroom.

The lack of reliability for the dominance dimension may point to the inappropriateness of the construct in the classroom. However, concluding that the *dominance* dimension does exist in the classroom is anchored in theory and research. The tripartite of pleasure, arousal, and dominance have been found to transcend specific contexts theoretically and operationally (Mehrabian & Russell, 1974). Further, strong evidence of the dominance dimension has emerged in classroom power and humor research (c.f. Civikly 1989; Richmond, 1990). Yet students may need help recognizing dominance in the classroom before they can assess their feelings for this domain. In the classroom context, where an implicit power relationship exists which favors the instructor, students may take issues of *dominance* for granted, or see them as mute points. Thus, it is possible that students did not understand inquiries into *dominance* without examples or more explanation.

Hypothesis One: Immediacy

This hypothesis was confirmed. Results of correlations for teacher verbal and nonverbal teacher immediacy with learning roughly reproduce those of Gorham (1988). Thus verbal and nonverbal teacher immediacy are again associated with learning.

Findings for verbal and nonverbal teacher immediacy replicated Gorham (1988) with one major exception, teacher use of humor. Gorham found that the use of humor was "of particular importance" (p.47), correlating .51 with total affect and .39 with learning. In the present study humor correlated substantially lower (.26 with total affect and .23 with learning). Gorham & Zakahi's (1990) replication of Gorham's (1988) research found humor to be significantly correlated with only one measure of cognitive learning. Gorham and Zakahi's finding that humor did not correlate above .30 for any of the affective measures is in line with the present findings. Thus, in three studies,

presumably employing like methods, three separate findings for humor were found. Future research should address these discrepancies.

The findings for hypothesis 1 are useful in prescribing effective behaviors to those interested in becoming more effective teachers. Unfortunately, listing behaviors and not providing reasons for how they function is not intellectually stimulating or indicative of a solid, mature body of theory and research. Teachers would benefit from more information than a "just do it" explanation.

Hypothesis Two: Implicit Communication Theory

This hypothesis was confirmed. The relationship among student emotion and learning may be summarized as: students who felt *pleasure* and *arousal* also self-reported more learning. Although results for this hypothesis indicate that *pleasure* and *arousal* are significantly and positively related to learning, one might have expected the unique variance in learning accounted for by *arousal* to exceed 2 percent. It should be noted, however, that for *pleasure* to emerge as the first and most important factor, followed by *arousal*, and dominance is consistent with previous implicit communication research (Mehrabian & Russell 1974). Further, an examination of *arousal*'s correlation with *pleasure* (r=.59) indicates a strong overlap.

The importance of *arousal* is further evidenced by the correlations between that dimension and learning. Although the values are lower than those for *pleasure*, *arousal* correlates moderately with cognitive (r=.45) and affective (r=.48) learning. As a reference point, *arousal*'s association with learning was as strong as verbal teacher immediacy and stronger than nonverbal teacher immediacy. Although it's effects seem dwarfed by those of *pleasure*, *arousal* appears as important to learning as either verbal or nonverbal teacher immediacy, and should not be dismissed.

Hypothesis 3 Immediacy and Implicit Communication Theory

Hypothesis three was confirmed. Teachers who employ immediate behaviors provoke in their students increased feelings of *pleasure* and *arousal*. Student emotional response accounts for more variance in learning than does teacher immediacy. Specifically, *pleasure* accounted for most of the variance in learning and verbal teacher immediacy added an additional 1 to 4 percent: *Arousal*, *dominance*, and nonverbal teacher immediacy each accounted for less than 2 percent. Therefore, *pleasure* is the strongest predictor of learning followed by *arousal*, verbal teacher immediacy, and nonverbal teacher immediacy.

Implicit communication theory holds that this increase in *pleasure* and *arousal* leads to increases in *liking*, and *liking* in turn encourages one to physically or psychologically *approach* the teacher and subject matter. Indeed, in this study students who felt more *pleasure* and *arousal* also learned more presumably because they felt closer to the instructor and material.

By explaining how teacher immediacy functions, implicit communication theory offers increased conceptual coherency. A better understanding of the sequence of events that follow immediate behaviors leads to a clearer picture of where teacher immediacy as a variable ends and others, such as solidarity, begin. Teacher immediacy may now be more accurately viewed as separate from and a producer of solidarity (Beebe & Biggers, 1990). That is, by producing feelings of *pleasure*, *arousal*, and *dominance* that cause students to feel more *liking*, teacher immediacy may cause students to feel more solidarity. This example supports the notion that the application of implicit communication theory to instructional variables is potentially fruitful.

Stronger operationalizations of teacher immediacy is also possible by examining the exploratory variables of *pleasure*, *arousal*, and *dominance*,. Further, in behavior variables such as humor that exhibit a complex relationship with learning (Gorham & Christophel, 1990), this approach may provide simplification.

By considering implicit communication theory and teacher immediacy, the heuristic benefit becomes clear. Findings suggest that something more than teacher immediacy effects students' emotions that are characteristic of learning. Through examining other teacher behaviors, and considering the effects of these behaviors on student feelings of *pleasure*, *arousal, and dominance*, new and important teacher effectiveness variables may be isolated.

Implicit communication theory also increases our knowledge of pedagogy with regard to teacher immediacy. This study has isolated specific teacher immediacy behaviors that directly effect student feelings of *pleasure* and *arousal*. Instructors that praise/offer feedback on work, show a willingness and interest in talking with students, address them by first name, and employ inclusive pronouns such as "our" class and what "we" must do, nonverbally display vocal expressiveness, smiling, relaxed body posture, and varied gestures and movements. Increases in *pleasure* and *arousal* enhance student learning by increasing students' *liking* for the instructor primarily and subject matter secondarily.

Future research should investigate the application of implicit communication theory to other instructional variables. Just how these variables effect students' emotion is still unclear. Further, such investigations promise to

increase conceptual coherence, better define and operationalize these variables, clarify how they are interrelated, and lead to other, as of yet unidentified variables.

More work is needed to obtain a reliable measure for the dimensions of *pleasure*, *arousal*, and particularly *dominance* in the classroom. The three dimensions may be more appropriate for the classroom if they are first defined, and then followed by Likert-type scales or bipolar adjective pair scales similar to scales measuring affective learning developed by McCroskey et al, (1985).

Clearly one limitation to the present research lies in the measurement of the *dominance* dimension. Because *dominance* measures were not reliable, and because there may have been confusion over similarities among the measures of *pleasure*, *arousal*, and *dominance*, a different strategy for operationalizing student emotion seems warranted. As noted above, by providing an operationalization of *dominance* that is context specific, these measurement problems may be reduced.

Exploring the use of physiological measures of *pleasure*, *arousal*, and *dominance* such as facial expressions, pulse rate, and body symmetry as well as new self-assessment measures such as Continuous Affective Response Technology (Ivy et al, 1991) should be further investigated. If more effective ways of measuring student emotions can be isolated, investigations of teacher variables that effect student emotions will benefit.

Previous research indicates that variables such as student ethnicity (Sanders & Wiseman, 1990) and instructor gender (Gorham & Christophel, 1990) effect teacher immediacy. More replication coupled with also measuring student emotional response may help explain previous findings.

Future research identifying teacher behaviors associated with student *arousal* and *dominance* is needed. Additionally, research should investigate the effects of nonteaching variable sets such as quality of instruction and classroom climate on student *pleasure*, *arousal*, and *dominance*.

Conclusion

In this study, the relationship among student emotions and learning has been investigated via the framework of implicit communication theory. Increases in student *pleasure* and *arousal* levels are positively associated with cognitive and affective learning. These findings lend credibility to the application of implicit communication theory to the classroom. Because learning is associated with student emotions, implicit communication theory is a more

direct way of investigating specific variable's effects on learning. Therefore, by integrating instructional research into the implicit communication theoretical framework, increased clarity and precision result.

Teacher immediacy can be explained by the assumptions underlying implicit communication theory. That is, how teacher immediacy functions can be explained by variations in student emotion. This suggests that teacher immediacy functions by *implicitly* communicating *liking* to students, increasing their levels of *pleasure*, *arousal*, and *dominance*, indicative of a reciprocal *liking* which in turn leads to physical and/or psychological *approach* and *activity* behaviors characteristic of increased learning. This sort of clarification is important because it helps define and clarify what teacher immediacy is, what it effects, and how it functions. Further, it points to the operation of other variables effecting learning which may lead to a stronger understanding of effective teaching. This research makes explaining teacher immediacy to the teachers of tomorrow easier by providing an explanation that is parsimonious and easy to assimilate. The vary articulation of "teachers teaching teaching to teachers" suggests the confusing nature of the task. All efforts to clarify are of great value.

Notes

[1] See for example Christophel, 1990; Gorham, 1988; Gorham & Christophel, 1990; Gorham & Zakahi, 1990; Gorham & Zakahi, 1990; Powell & Harville, 1990; Richmond, McCroskey, Kearney, & Plax, 1985; Sanders & Wiseman, 1990.

[2] See for example Christophel, 1990; Gorham & Christophel, 1990; Gorham & Zakahi, 1990; Plax, Kearney, McCroskey & Richmond, 1986; Gorham, 1988; Powell & Harville, 1990; Sanders & Wiseman, 1990; Woolfolk & Woolfolk, 1974.

[3] See for example (Allen & Shaw, 1990; Christophel, 1990; Gorham, 1988 Gorham & Christophel, 1990; Gorham & Zakahi, 1990; Kelley & Gorham, 1988; Powell & Harville, 1990; Richmond, 1990; Richmond, Gorham, & McCroskey, 1987; Richmond et al., 1985; Sanders & Wiseman, 1990)

[4] See for example Allen & Shaw, 1990; Andersen, 1978,1979; Andersen, Norton, & Nussbaum, 1981; Andersen & Withrow, 1981; Christophel, 1990; Kearney, Plax & Wendt-Wasco, 1985; Gorham, 1988; Gorham & Christophel, 1990; Gorham & Zakahi, 1990; McDowell, McDowell & Hyerdahl, 1980; Plax, Kearney, McCroskey & Richmond, 1986; Plax, Kearney & Wendt-Wasco, 1985; Powell & Harville, 1990; Richmond, 1990; Rodgers & McCroskey, 1984; Sanders & Wiseman, 1990; Stewart & Wheeless, 1987.

[5] See for example Andersen, Norton & Nussbaum, 1981; Collier & Powell, 1989; Sorensen, 1989.

[6] See for example Kearney, Plax & Wendt-Wasco, 1985; Kearney, Plax, Smith & Sorensen, 1988; McCroskey, Richmond, Plax & Kearney, 1985; Plax et al., 1986; Richmond, McCroskey, Kearney & Plax, 1985.

7 See for example Powell & Harville, 1990

[8] See for example Chaiken, Gillen, Derlega, Heinen & Wilson, 1978; Kearney, Plax, Smith & Sorensen, 1988; Plax, Kearney, McCroskey & Richmond, 1986

Table 1

Reliabilities for Dependent Measures

Attitude:	
Content	.87
Behaviors	.91
Instructor	.96
Overall Attitude	.94
Behavioral intent:	
Content	.96
Behaviors	.94
Instructors	.97
Overall Behavior	.93
Total Affect	.96

Table 2

Multiple Regression Results for Extraneous Variables on Total Affect expressed in variance accounted for

	F	P	R Squared
Talk			
Teacher	.026	.8711	0.0000
Student	.738	.3907	0.0009
No one	1.093	.2961	0.0013
Teacher			
gender	.491	.4835	0.0008
ethnicity	5.275	.0220	0.0089
Student			
ethnicity	3.087	.0794	0.0038
gender	2.446	.1184	0.0041
classification	4.911	.0271	0.0083
age	2.656	.1037	0.0045

Table 3

Means by Class Size

	Small	Medium	Large
Affective learning			
Attitude	31.6	33.5	32.4
Intent	38.0	39.7	40.3
Total Affect	69.6	73.2	72.7
Immediacy			
Verbal	34.8	31.0	27.8
Nonverbal	31.0	30.8	31.2
Emotion			
Pleasure	27.8	27.5	26.6
Arousal	32.9	32.4	32.7

Table 4

Learning Accounted for
Verbal and Nonverbal Immediacy
(Beat Weights and Variance Partialed)

	Verbal	Nonverbal	Colinearity	VAF/Rsqr
Learning*				
Variance	4.3	4.1	11.8	20.2
Beta	.225†	.249†	—	.202
Learning Loss*				
Variance	7.6	1.5	8.9	18.0
Beta	-.320†	-.148‡	—	.180
Attitude*				
Variance	8.6	4.5	18.0	31.1
Beta	.361	.263†	—	.311
Intent*				
Variance	10.1	1.6	11.8	23.5
Beta	.392†	.158†	—	.235
Total Affect*				
Variance	13.0	4.5	13.5	31.1
Beta	.396†	.223†	—	.311

* The model is significant at <.0001
† The coefficient is significant at <.0001
‡ The coefficient is significant at <.001

Table 5

Correlations of Immediacy with Learning Measures

	Attitude	Intent	T. Affect	Cog	Loss
Total					
VI	.52*	.49*	.53*	.40*	-.41*
VI1	.21*	.19*	.21*	.17*	-.15**
VI2	.37*	.32*	.36*	.27*	-.33*
VI3	.21*	.19*	.21*	.17*	-.19*
VI4	.30*	.21*	.26*	.23*	-.21*
VI5	.33*	.35*	.36*	.25*	-.26*
VI6	.30*	.32*	.33*	.24*	-.24*
VI7	.33*	.37*	.37*	.32*	-.26*
VI8	.44*	.40*	.44*	.34*	-.33*
VI9	.34*	.32*	.35*	.25*	-.28*
VI10	.17*	.20*	.19*	.15**	-.16**
VI11	.34*	.33*	.35*	.28*	-.26*
VI12	.35*	.31*	.35*	.29*	-.29*
VI13	.41*	.36*	.40*	.28*	-.32*
VI14	.49*	.43*	.49*	.33*	-.34*
VI15	.21*	.21*	.22*	.18*	-.14**
VI16	.23*	.14**	.14**	.07	-.10
Total					
NVI	.48*	.39*	.45*	.40*	-.34*
NVI1	.14**	.10	.13**	.09	-.10
NVI2	.29*	.25*	.28*	.26*	-.20*
NVI3	.27*	.20*	.24*	.23*	-.21*
NVI4	.35*	.24*	.31*	.28*	-.24*
NVI5	.41*	.32*	.38*	.32*	-.33*
NVI6	.22*	.17*	.20*	.21*	-.11
NVI7	.15**	.18*	.17*	.14**	-.14**
NVI8	.27*	.26*	.28*	.26*	-.22*
NVI9	.11	.08	.10	.06	-.02
NVI10	.11	.08	.10	.11	-.15**
NVI11	.31*	.27*	.30*	.22*	-.22*
NVI12	.36*	.31*	.35*	.31*	-.29*
NVI13	.43*	.37*	.42*	.34*	-.34*

*p<.0001
**p<.001

Table 6
Learning Accounted for by Pleasure and Arousal
(Beta Weights and Variance Partialed)

	Pleasure	Arousal	Colinearity	VAF/Rsqr
Learning*				
Variance	14.5	1.8	18.1	34.4
Beta	.472†	.168†	—	.344
Learning Loss*				
Variance	8.9	1.4	11.7	22.0
Beta	-.369†	-.146‡	—	.220
Attitude*				
Variance	28.6	.4	21.3	50.3
Beta	.66†	.075	—	.503
Intent*				
Variance	19.3	1.0	18.6	38.9
Beta	.544†	.121	—	.389
Total Affect*				
Variance	33.9	1.5	13.7	49.1
Beta	.632†	.107	—	.491

*The model is significant at <.0001
†The coefficient is significant at <.0001
‡The coefficient is significant at <.001

Table 7

Correlations of Emotion Items with Learning Measures

	Attitude	Intent	T. Affect	Cog	Loss
Pleasure					
total	.71*	.62*	.70*	.58*	-.46*
items					
1	.67*	.59*	.66*	.54*	.45*
2	.56*	.47*	.54*	.44*	-.34*
3	.63*	.55*	.62*	.54*	-.45*
4	.27*	.23*	.26*	.21*	-.10
5	.58*	.51*	.57*	.43*	-.58*
6	.54*	.48*	.54*	.48*	-.54*
Arousal					
total	.47*	.45*	.48*	.45*	-.37*
items					
1	-.01	.04	.02	.03	-.01
2	.25*	.23*	.25*	.28	-.25*
3	.25*	.24*	.26*	.25*	-.17*
4	.31*	.28*	.31*	.31*	-.28*
5	.46*	.45*	.48*	.41*	-.31*
6	.53*	.48*	.53*	.47*	-.40*
Dominance					
total	.09	.12**	.11	.04	-.05
items					
1	.24*	.25*	.23*	.23*	-.22*
2	-.09	-.05	-.07	-.13**	-.06
3	-.01	.00	-.01	.01	.00
4	.24*	.20*	.23*	.18*	-.14**
5	.23*	.22*	.24*	.20*	-.13**
6	-.30*	-.22*	-.27*	-.31*	-.23*

*p<.0001
**p<.001

Table 8

Variance in Learnaing Accounted for by Implicit Communication Theory and Immediacy (Variance Partialed)

	Pleasure	Arousal	NVI	VI	Colinearity	VAF
Learning	12.9**	1.8*	0.9	1.1*	18.3	35.0
Learning Loss	05.2**	1.4*	0.9	3.6**	14.5	25.6
Overall Attitude	18.0**	0.0	0.2	31.**	30.3	51.6
Intent	10.9**	0.4	0.5	3.5**	25.3	40.6
Total Affect	15.6**	0.3	0.0	3.7**	19.6	31.2

*p<.01
**p<.0001

Table 9

Corrleations of Implicit Communication Theory variables with Immediacy Items

	Pleasure	Arousal	Dominance
Immediacy items			
(Verbal)			
1	.23*	.18*	.05
2	.34*	.27*	.09
3	.21*	.16**	.10
4	.28*	.18*	.01
5	.30*	.25*	.10
6	.27*	.24*	.11
7	.35*	.31*	.13
8	.44*	.26*	.07
9	.30*	.24*	.06
10	.20*	.23*	.02
11	.39*	.25*	.03
12	.34*	.21*	.02
13	.39*	.27*	.01
14	.49*	.32*	.10
15	.20*	.12	.09
16	.11	.13	.05
(Nonverbal)			
1	.12	.08	.03
2	.32*	.24*	.04
3	.43*	.29*	-.07
4	.23*	.22*	.06
5	.32*	.24*	.07
6	.15**	.12	-.02
7	.23*	.22*	-.05
8	.32*	.24*	-.07
9	.15**	.12	-.05
10	.12	.06	-.02
11	.34*	.15**	-.08
12	.35*	.26*	-.04
13	.47*	.34*	-.01

**p<.001
*p<.0001

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